

UTILITY PATENT APPLICATION TRANSMITTAL

(Large Entity)

(Only for new nonprovisional applications under 37 CFR 1.53(b))

Docket No.
4-16SUS-FF

Total Pages in this Submission

TO THE ASSISTANT COMMISSIONER FOR PATENTSBox Patent Application
Washington, D.C. 20231

Transmitted herewith for filing under 35 U.S.C. 111(a) and 37 C.F.R. 1.53(b) is a new utility patent application for an invention entitled:

APPARATUS AND METHOD FOR CONTROLLING DISPLAY OF DATABASE SEARCH ITEMS

and invented by:

Yoshinori Ohta
Keisuke Tanaka

If a CONTINUATION APPLICATION, check appropriate box and supply the requisite information:

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Enclosed are:

Application Elements

1. ☒ Filing fee as calculated and transmitted as described below
2. ☒ Specification having 26 pages and including the following:
 - a. ☒ Descriptive Title of the Invention
 - b. ☐ Cross References to Related Applications (if applicable)
 - c. ☐ Statement Regarding Federally-sponsored Research/Development (if applicable)
 - d. ☐ Reference to Microfiche Appendix (if applicable)
 - e. ☒ Background of the Invention
 - f. ☒ Brief Summary of the Invention
 - g. ☒ Brief Description of the Drawings (if drawings filed)
 - h. ☒ Detailed Description
 - i. ☒ Claim(s) as Classified Below
 - j. ☒ Abstract of the Disclosure

UTILITY PATENT APPLICATION TRANSMITTAL
(Large Entity)

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4-165US-FF

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Application Elements (Continued)

3. ☒ Drawing(s) *(when necessary as prescribed by 35 USC 113)*
- a. ☒ Formal Number of Sheets 17 (Figs. 1-17)
- b. ☐ Informal Number of Sheets _____
4. ☒ Oath or Declaration
- a. ☒ Newly executed *(original or copy)* ☐ Unexecuted
- b. ☐ Copy from a prior application (37 CFR 1.63(d)) *(for continuation/divisional application only)*
- c. ☒ With Power of Attorney ☐ Without Power of Attorney
- d. ☐ DELETION OF INVENTOR(S)
Signed statement attached deleting inventor(s) named in the prior application,
see 37 C.F.R. 1.63(d)(2) and 1.33(b).
5. ☐ Incorporation By Reference *(usable if Box 4b is checked)*
The entire disclosure of the prior application, from which a copy of the oath or declaration is supplied
under Box 4b, is considered as being part of the disclosure of the accompanying application and is hereby
incorporated by reference therein.
6. ☐ Computer Program in Microfiche *(Appendix)*
7. ☐ Nucleotide and/or Amino Acid Sequence Submission *(if applicable, all must be included)*
- a. ☐ Paper Copy
- b. ☐ Computer Readable Copy *(identical to computer copy)*
- c. ☐ Statement Verifying Identical Paper and Computer Readable Copy

Accompanying Application Parts

8. ☒ Assignment Papers *(cover sheet & document(s))*
9. ☐ 37 CFR 3.73(B) Statement *(when there is an assignee)*
10. ☐ English Translation Document *(if applicable)*
11. ☐ Information Disclosure Statement/PTO-1449 ☐ Copies of IDS Citations
12. ☐ Preliminary Amendment
13. ☒ Acknowledgment postcard
14. ☐ Certificate of Mailing
- ☐ First Class ☐ Express Mail *(Specify Label No.):* _____

UTILITY PATENT APPLICATION TRANSMITTAL (Large Entity)

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Accompanying Application Parts (Continued)

15. ☒ Certified Copy of Priority Document(s) (if foreign priority is claimed)

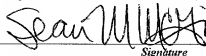
16. ☐ Additional Enclosures (please identify below):

Fee Calculation and Transmittal

CLAIMS AS FILED

For	#Filed	#Allowed	#Extra	Rate	Fee
Total Claims	6	- 20 =	0	x \$18.00	\$0.00
Indep. Claims	2	- 3 =	0	x \$78.00	\$0.00
Multiple Dependent Claims (check if applicable) <input type="checkbox"/>					\$0.00
BASIC FEE					\$690.00
OTHER FEE (specify purpose) Assignment Recordation					\$40.00
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**APPLICATION
FOR
UNITED STATES
LETTERS PATENT**

APPLICANT: YOSHINORI OHTA ET AL.

FOR: APPARATUS AND METHOD FOR
CONTROLLING DISPLAY OF DATABASE
SEARCH ITEMS

DOCKET NO.: 4-165US-FF

SPECIFICATION

TITLE OF THE INVENTION

APPARATUS AND METHOD FOR CONTROLLING DISPLAY OF DATABASE

SEARCH ITEMS

5 BACKGROUND OF THE INVENTION

Field of the Invention

 This invention relates to an apparatus and method
for controlling the display of search items involving a
database (inclusive of a display prior to searching the
10 database and a display of search results after searching
the database).

Description of the Related Art

 Generally a database is created by designing tables
constructed within the database and configuring a scheme
15 that is in line with a specific task. Redundancy of
data is improved by the structure of such a database.

 However, since the scheme conforms to the specific
task alone, it is difficult to apply the database to
other tasks. The database must be redesigned,
20 therefore, if it is to be applied to another task.

 Further, since changes or additions to the names of
search items in a database involve changing the database
per se, this is inevitably carried out by an expert
having thorough knowledge of databases. A user who is
25 not accustomed to handling databases will find
difficulty in changing or adding to the names of search
items.

DISCLOSURE OF THE INVENTION

Accordingly, an object of the present invention is to arrange it so that even a user not accustomed to handling databases can make changes or additions to the search items of a database in a comparatively simple manner.

According to the present invention, the foregoing object is attained by providing an apparatus for controlling display of database search items, comprising: a database storing an element-data storage table in which has been stored, on a field-by-field basis, element data corresponding to the fields, an item-name table which stipulates, field by field, an item name for being made to correspond with a database search-item name, and a display-item designation table in which display-item data for designating an item name to be displayed on a display unit has been stored; a select-command input unit (select-command input means) for applying a select command for designating a display item; a display-item data read-out unit (display-item data read-out means) for reading out, from the display-item designation table, the display-item data that conforms to the select command applied by the select-command input unit; an item-name read-out unit (item-name read-out means) for reading out, from the item-name table, an item name to be displayed on the display unit, the item name being designated by the display-item data read out by the display-item data read-out unit; and a display control unit (display control means) for

displaying an item name, which has been read out by the item-name read-out unit, on the display unit as a database search-item name.

The present invention provides also a method
5 suitable for the apparatus described above.
Specifically, the present invention provides a method of controlling display of search items of a database storing an element-data storage table in which has been stored, on a field-by-field basis, element data
10 corresponding to the fields, an item-name table which stipulates, field by field, an item name for being made to correspond with a database search-item name, and a display-item designation table in which display-item data for designating an item name to be displayed on a
15 display unit has been stored, the method comprising the steps of: applying a select command for designating a display item; reading out, from the display-item designation table, the display-item data that conforms to the select command applied; reading out, from the
20 item-name table, an item name to be displayed on the display unit, the item name being designated by the display-item data read out; and displaying an item name, which has been read out, on the display unit as a database search-item name.

25 In accordance with the present invention, the above-mentioned element-data storage table, item-name table and display-item designation table are stored in the database. When the select command is applied, the

display-item data conforming to the select command is read out of the display-item designation table. When the display-item data is read out, an item name specified by the display-item data that has been read
5 out is read out of the item-name table. The item name read out is displayed on the display unit as the name of a search item in the database.

In a case where a database search is conducted, a value corresponding the name of a database search item
10 displayed on the display unit is entered. Results obtained by the database search are displayed on the display unit.

By entering change-targeted item-name data, which represents a change-targeted item name for changing the
15 name of an item specified in the item-name table, as well as item-name change data, which represents the name of an item after a change, an item name decided by the entered change-targeted item-name data, which is among the item names specified in the item-name table, is
20 changed to an item name represented by the item-name change data.

Further, if data representing an additional item name for adding an item name specified in the item-name table is entered, then the additional item name
25 represented by the entered additional-item-name data will be stored in the item-name table in association with the field.

Thus, by adding or changing an item name that has

been stored in the item-name table, an item name capable of being displayed on the display unit can be added on or changed.

Furthermore, if display-item change data for
5 changing the display-item data that has been stored in the display-item designation table is entered, then the display-item data that has been stored in the display-item designation table will be changed in accordance with the entered display-item change data.

10 Furthermore, by entering display-item add-on data for adding on the display-item data that has been stored in the display-item designation table, the display-item data stored in the display-item designation table will be added on in accordance with the entered display-item
15 add-on data.

An item name displayed on the display unit can be added on or changed.

Data specifying the order in which search items are to be displayed can also be stored in the display-item
20 designation table. This will also make possible a situation in which the order of the search-item display can be changed.

Thus, even a user not accustomed to handling databases can change the names of items displayed on the
25 display unit.

Other features and advantages of the present invention will be apparent from the following description taken in conjunction with the accompanying

drawings, in which like reference characters designate the same or similar parts throughout the figures thereof.

BRIEF DESCRIPTION OF THE DRAWINGS

- 5 Fig. 1 is a block diagram illustrating the electrical construction of a data communication system;
- Fig. 2 illustrates an overview of a page definition table, item-name definition table and general-purpose table that have been stored in a database;
- 10 Fig. 3 illustrates the details of the general-purpose table;
- Fig. 4 illustrates the details of the item-name definition table before a change;
- Fig. 5 illustrates the details of the page definition table;
- 15 Fig. 6 illustrates the details of the item-name definition table after a change;
- Figs. 7 to 12 illustrate examples of HTML search pages displayed on the display unit of a client
- 20 computer;
- Fig. 13 illustrates the details of the page definition table;
- Figs. 14 to 16 show examples of HTML search pages displayed on the display unit of the client computer;
- 25 and
- Fig. 17 is a flowchart illustrating a procedure for displaying a search page.

DESCRIPTION OF THE PREFERRED EMBODIMENTS

A preferred embodiment of the present invention will now be described in detail with reference to the drawings.

Fig. 1 illustrates a data communication system
5 according to a preferred embodiment of the present invention.

The data communication system comprises a client computer 1 and a database system 10 capable of communicating with each other via a network such as the
10 Internet. The client computer 1 includes a display unit, and the database system 10 includes a Web server 11. The Web server 11 includes a CPU, a memory, a CD-ROM drive, a display unit and so on.

The database system 10 further includes an HTML
15 (HyperText Markup Language) template storage unit 16 in which data representing a template for displaying an HTML search page has been stored; a database 15 for storing various data; a database controller 14 for searching various data that has been stored in the
20 database 15; a search-page generating unit 13 for generating the HTML page data (inclusive of a page for inputting search criteria, a page for displaying search results and a page for inputting data to the database); and a controller 12 for controlling the overall
25 operation of the database system 10.

A general-purpose table (element-data storage table), item-name definition table (item-name table) and page definition table (display-item designation table)

have been stored in the database 15, as will be described later. In order to change the content of each table stored in the database 15, a customizing tool (constituted by a computer, keyboard, mouse and monitor, 5 etc.) 21 has been connected to the database system 10.

Though the database system 10 and customizing tool 21 are illustrated as being implemented by hardware in Fig. 1, software implementation may be adopted as necessary.

10 Fig. 2 illustrates an overview of the tables that have been stored in the database 15 included in database system 10.

The database 15 stores the general-purpose table, item-name definition table and page definition table, as 15 mentioned above.

Element data, which is data that is the object of a search, has been stored in the general-purpose table per character data string, numeric data string and date data string. The character data string, numeric data string 20 and date data string are of numerous types and element data composed of a character string, element data composed of numerals and element data composed of dates is stored in the table in conformity with the type of data string. Data numbers are also stored in the 25 general-purpose table in order to identify the element data.

An item-number, search-item name and field name have been stored in the item-name definition table.

The search-item name is an item name displayed on the database search page, and the item-name number is a number for identifying a search-item name. The field name is for specifying a character data string, numeric data string and date data string that have been stored in the general-purpose table. The item-name definition table and general-purpose table are associated with each other by the field name.

A page number, page name, item-name number, order of the items and display type have been stored in the page definition table. The page number specifies the search page to be displayed. The page name indicates the name of the search page to be displayed. The order of the items indicates the order in which the search items are displayed on an HTML search page. The display type indicates the display type of a search item displayed on the HTML search page.

The page definition table and the item-name definition table area associated with each other by the item-name number.

Fig. 3 illustrates the details of the general-purpose table.

For each string (field) specified by a field name (character data strings 1, 2, ..., 14, 15, numeric data strings 1, ..., 10 and date string 1, etc.), element data corresponding to the string has been stored in the general-purpose table. Element data (printer, monitor, cable, camera, etc.) corresponding to product category

- has been stored in character data string 1. Element data (C-300D, DN40T, AB-100, C-123, etc.) corresponding to a product name has been stored in character data string 2. Element data (AAA Electric Co., BBB Monitor Co., EE Media Co., FF Electronics Co., etc.) corresponding to a manufacturer name has been stored in character data string 14. Element data (TA system, flat panel, megapixel, etc.) corresponding to product features has been stored in the character data string 15. Element data (18000, 43000, etc.) corresponding to the weight of a product has been stored in the numeric data string 1. Element data (15600, 7200, etc.) corresponding to the number of the items of a product in stock has been stored in the numeric data string 10. Element data (1997/4/8, 1998/1/19, etc.) corresponding to the sales date of a product has been stored in the date data string 1.

The set of the items of element data on one line is identified by the data number.

- Fig. 4 shows the details of the item-name definition table. A search item capable of being displayed on an HTML search page is stipulated by this item-name definition table.

- An item name has been assigned in correspondence with each field name. Since element data indicating product category has been stored in the character data string 1 of the general-purpose table, as mentioned above, "PRODUCT CATEGORY" has been assigned as the item

name that matches this element data. Item names conforming to the content of element data that has been stored in respective data strings of the general-purpose table are assigned in similar fashion as the other item names.

Unique item-name numbers have been assigned in order to identify these item names and field names.

Fig. 5 shows the details of the page definition table. This table stipulates search items displayed on an HTML search page and the order in which these search items are arranged.

Search items decided by item-name numbers having the same page number (page name) are displayed on an HTML search page. For example, since "1, 2, 9, 10, 11, 24" are the item-name numbers on page number 1, the following are displayed as the names of search items on the HTML search page represented by page number 1: the item name "PRODUCT CATEGORY" stipulated by item-name number 1, the item name "PRODUCT NAME" stipulated by item-name number 2, the item name "MANUFACTURER NAME" stipulated by item-name number 9, the item name "PRODUCT FEATURE" stipulated by item-name number 10, the item name "WEIGHT" stipulated by item-name number 11, and the item name "SALES DATE" stipulated by item-name number 24.

The order in which the search items are displayed on the search page is in accordance with the sequence of the numerals stipulated by the order of the items. The

items are displayed in the following order, which is in order of increasing numerals: search item stipulated by item-name number 1, search item stipulated by item-name number 2, search item stipulated by item-name number 9, 5 search item stipulated by item-name number 10, search item stipulated by item-name number 11 and search item stipulated by item-name number 24. Accordingly, the order is "PRODUCT NAME", "MANUFACTURER NAME", "PRODUCT FEATURE", "WEIGHT" and "SALES DATE".

10 In Fig. 5, "TEXT" or "LIST" is the display type. "TEXT" displays a search item of a type for which a value corresponding to a search item is to be input. "LIST" displays, in a list format, values corresponding to search items. In the example depicted in Fig. 5, the 15 display format of the search item "MANUFACTURER NAME" specified by item-name number 9 is "LIST", and "AAA ELECTRIC CO./FFF ELECTRONICS CO./GG INDUSTRIES" have been stored as the values. By pulling down a menu, "AAA ELECTRIC CO./FFF ELECTRONICS CO./GG INDUSTRIES" will 20 displayed on the display screen of the display unit under the search item "MANUFACTURER NAME" on the HTML search page.

Likewise, for search pages designated by page numbers 2 and 3, the search items decided by the item- 25 name numbers are displayed in accordance with the display type in the order of the items in a manner similar to that of the search page designated by page number 1.

By virtue of the fact that the database 15 stores each of the tables shown in Figs. 2 to 5, an item name displayed on an HTML search page can be changed by changing the item name that has been stored in the item-
5 name definition table.

Fig. 6 illustrates an example of the item-name definition table.

The content of the item-name definition table of Fig. 6 has been changed in comparison with that of the
10 item-name definition table shown in Fig. 4. Specifically, the item name stipulated by item name number 1 has been changed from "PRODUCT CATEGORY" to "PRODUCT CLASS", the item name stipulated by item name number 9 has been changed from "MANUFACTURER NAME" to
15 "NAME OF MANUFACTURING COMPANY", and the item name stipulated by item name number 11 has been changed from "WEIGHT" to "POUNDAGE".

By changing the item-name definition table in the manner shown in Fig. 6, the search items displayed on
20 the HTML search page are changed.

Fig. 7 illustrates an example of an HTML search page displayed on the display unit of the client computer 1.

The HTML search page shown in Fig. 7 is identified
25 by page number 1 (Page Name: ROOT/query).

The HTML search page includes the following areas:
Search-item display area A1:

The area displays search items as well as areas for

making inputs or selections in conformity with the search items. The HTML search page shown in Fig. 7 is displayed in accordance with the item-name definition table illustrated in Fig. 4 and page definition table shown in Fig. 5. The names of search items are displayed in the order "PRODUCT CATEGORY", "PRODUCT NAME", "MANUFACTURER NAME", "PRODUCT FEATURE", "WEIGHT" and "SALES DATE".

Join-condition designating area A3:

10 This is an area for designating a join condition that has been entered in a search item.

Search area A4:

This is an area clicked by the user of the client computer 1 when a search command is transmitted from the
15 client computer 1 to the database system 10.

By changing the item-name definition table from the table shown in Fig. 4 to the table shown in Fig. 6, the HTML search page displayed on the display unit of the client computer 1 changes in the manner shown in Fig. 8.

20 In the HTML search page shown in Fig. 8, the search item displayed in the search-item display area A1 has changed in accordance with the item-name definition table illustrated in Fig. 6. As mentioned above, the item-name definition table illustrated in Fig. 6 is such
25 that the item name stipulated by item name number 1 has been changed from "PRODUCT CATEGORY" to "PRODUCT CLASS", the item name stipulated by item name number 9 has been changed from "MANUFACTURER NAME" to "NAME OF

MANUFACTURING COMPANY", and the item name stipulated by item name number 11 has been changed from "WEIGHT" to "POUNDAGE". As a result, the HTML search page shown in Fig. 8 also is such that the search items displayed in the search-item display area A1 have changed from "PRODUCT CATEGORY" to "PRODUCT CLASS", from "MANUFACTURER NAME" to "NAME OF MANUFACTURING COMPANY" and from "WEIGHT" to "POUNDAGE".

Thus, by changing the item names contained in the item-name definition table, the search items displayed on the HTML search page are changed.

Fig. 9 illustrates an example of an HTML search page specified by page number 2 (Page Name: ROOT/Entry). This diagram is an HTML search page displayed on the display unit of the client computer 1 when each item of data is registered with the database 15.

The HTML search page shown in Fig. 9 includes the following areas:

Search-item display area A5:

This area displays search items for setting data; it includes area for entering setting data as well.

Image display area A6:

This is an area which displays an image representing a product.

Image selection area A7:

This area is clicked by the user of the client computer 1 when an image displayed in the image display

area A6 is selected.

Registration area A8:

This area is clicked by the user of the client computer 1 when a search item that has been set in the search-item display area A5 is registered with the database 15.

The search items decided by the item-name definition table shown in Fig. 4 are displayed in the search-item display area A5. By changing the item-name definition table shown in Fig. 4 to the item-name definition table shown in Fig. 6, the HTML search page shown in Fig. 9 becomes the HTML search page shown in Fig. 10, and the search items displayed in the search-item display area A5 and the order of arrangement thereof change.

Fig. 11 shows an HTML search page which displays a list of search results. This is a page which appears when data obtained by searching the database 15 is displayed on the display unit of the client computer 1.

This HTML search page includes the following areas:
Group keyword input area A21:

This is an area in which a group keyword is entered in a case where a search of the database 15 is conducted by applying a group keyword.

Grouping area A22:

This is an area clicked by the user of the client computer 1 when a command to search the database 15 is applied to the database system 10 by providing a group

keyword.

Search-result display area A10:

This is an area in which search results obtained by searching the database 15 are displayed item name by item name. The items displayed in search-result display area A10 also are stipulated by the item-name definition table. The item names displayed in the search-result display area A10 are changed by changing the item names in the item-name definition table.

10 Page display area A31:

This area indicates the number of the HTML search page being displayed.

Single-page advance area A32:

When an HTML search page being displayed is to be advanced by one page, this area is clicked by the user of the client computer 1.

Plural-page advance area A33:

When an HTML search page being displayed is to be advanced by a plurality of pages, this area is clicked by the user of the client computer 1.

Single-page return area A34:

When an HTML search page being displayed is to be turned back by one page, this area is clicked by the user of the client computer 1.

25 Plural-page return area A35:

When an HTML search page being displayed is to be turned back by a plurality of pages, this area is clicked by the user of the client computer 1.

By changing the names of items in the item-name definition table, the search items being displayed in the search-result display area A10 shown in Fig. 11 are changed in the manner shown in Fig. 12.

5 Fig. 13 illustrates an example of the page definition table.

In comparison with the page definition table illustrated in Fig. 5, the page definition table shown in Fig. 13 is such that the page number, page name, 10 order of the item name and display type specified by the item-name number 24 have been deleted. The order of the items also has been changed.

By changing the page definition table from that shown in Fig. 4 to that shown in Fig. 13, the search 15 item "SALES DATE" stipulated by item-name number 24 is deleted from the search items included on the HTML search page shown in Fig. 7 specified by page number 1, as illustrated in Fig. 14.

Further, the order in which the items are arranged 20 is changed so that the new order is "PRODUCT NAME", "MANUFACTURER NAME", "PRODUCT CATEGORY", "PRODUCT FEATURE" and "WEIGHT" decided by the page definition table of Fig. 13.

The search item "SALES DATE" stipulated by item- 25 name number 24 is deleted also from the HTML search page shown in Fig. 9 specified by page number 2, as illustrated in Fig. 15. The order in which the items are arranged also is changed so that the new order is

"PRODUCT CATEGORY", "PRODUCT NAME", "MANUFACTURER NAME",
"WEIGHT" and "PRODUCT FEATURE", as stipulated by the
page definition table of Fig. 13.

Similarly, with regard also to the HTML search page
5 shown in Fig. 11 specified by page number 3, the order
in which the items are arranged is changed so that the
new order is "MANUFACTURER NAME", "PRODUCT CATEGORY",
"PRODUCT FEATURE", "PRODUCT NAME" and "WEIGHT", as
stipulated by the page definition table of Fig. 13.

10 By deleting data that has been stored in the page
definition table, search items displayed on an HTML
search page can be deleted. Similarly, by adding new
data to the page definition table, new search items can
be displayed on an HTML search page. In addition, by
15 changing the order of items in the page definition
table, the order of search items displayed on an HTML
search page can be changed.

It goes without saying that change and deletion of
data that has been stored in the item-name definition
20 table or page definition table is carried out by
applying the command as well as the data for change and
deletion to the database 15 from the custom tool that
has been connected to the database system 10.

Fig. 17 is a flowchart illustrating processing for
25 displaying an HTML search page on the display unit of
the client computer 1.

First, a request to display a search page is
transmitted from the client computer 1 to the database

system 10. The request for display of the search page is received by the Web server 11 of the database system 10 (step 31). Next, the Web server 11 applies the search-page display request to the controller 12 (step 5 32). In response, an HTML template conforming to the request that has been transmitted from the client computer 1 is read out of the HTML template storage unit 16 by the controller 12. The read template is applied to the search-page generating unit 13 (step 33).

10 Further, the controller 12 applies a search-item request command to the database controller 14 via the search-page generating unit 13 (step 34). The item-name definition table and the page definition table are searched in accordance with the search-item request 15 command (step 35). The search items to be displayed on the HTML search page are extracted from the database 15 by the database controller 14 (step 36).

The extracted search items are applied to the search-page generating unit 13 from the database 20 controller 14 (step 37). The HTML search page is generated in the search-page generating unit 13 in such a manner that the search items that have been read out of the database 15 will be displayed in the template read out of the HTML template storage unit 16 (step 38). 25 The generated HTML search page is applied to the Web server 11, which proceeds to transmit the HTML search page to the client computer 1 (step 39).

Thus, as described above, HTML search pages of the

kind shown in Figs. 9 to 12 and Figs. 14 to 16 are displayed on the display unit of the client computer 1. Thus, even a user not accustomed to handling databases is capable of changing search display items.

- 5 As many apparently widely different embodiments of the present invention can be made without departing from the spirit and scope thereof, it is to be understood that the invention is not limited to the specific embodiments thereof except as defined in the appended
- 10 claims.

WHAT IS CLAIMED IS:

1. An apparatus for controlling display of database search items, comprising:

- a database storing an element-data storage table in
5 which has been stored, on a field-by-field basis,
element data corresponding to the fields, an item-name
table which stipulates, field by field, an item name for
being made to correspond with a database search-item
name, and a display-item designation table in which
10 display-item data for designating an item name to be
displayed on a display unit has been stored;
a select-command input device for applying a select
command for designating a display item;
a display-item data read-out device for reading
15 out, from the display-item designation table, the
display-item data that conforms to the select command
applied by said select-command input device;
an item-name read-out device for reading out, from
the item-name table, an item name to be displayed on the
20 display unit, said item name being designated by the
display-item data read out by said display-item data
read-out device; and
a display control unit for displaying an item name,
which has been read out by said item-name read-out
25 device, on the display unit as a database search-item
name.

2. The apparatus according to claim 1, further comprising:

a change-data input device for inputting change-targeted item-name data, which represents a changed-targeted item name for changing the name of an item that has been stipulated in the item-name table, and item-
5 name change data representing the name of an item after a change; and

an item-name changing device for changing, to the name of an item represented by the item-name change data, an item name decided by the change-targeted item-
10 name data, which is among the item names specified in the item-name table, input from said change-data input device.

3. The apparatus according to claim 1, further comprising:

15 an additional-item-name data input device for inputting data representing an additional item name which adds on an item name specified in the item-name table; and

an item-name add-on device for storing an
20 additional item name, which is represented by additional-item-name data that has been input from said additional-item-name data input device, in the item-name table in correspondence with the field.

4. The apparatus according to claim 1, further comprising:
25

a display-item change-data input device for inputting display-item change data for changing the display-item table that has been stored in the display-

item designation table; and

a device for changing the display-item data, which has been stored in the display-item designation table, in accordance with display-item change data that has been input from said display-item change-data input device.

5. The apparatus according to claim 1, further comprising:

a display-item add-on data input device for inputting display-item add-on data for adding on the display-item data that has been stored in the display-item designation table; and

a device for adding on the display-item data stored in the display-item designation table in accordance with the display-item add-on data that has been input from said display-item add-on data input device.

6. A method of controlling display of search items of a database storing an element-data storage table in which has been stored, on a field-by-field basis, element data corresponding to the fields, an item-name table which stipulates, field by field, an item name for being made to correspond with a database search-item name, and a display-item designation table in which display-item data for designating an item name to be displayed on a display unit has been stored, the method comprising the steps of:

applying a select command for designating a display item;

reading out, from the display-item designation table, the display-item data that conforms to the select command applied;

reading out, from the item-name table, an item name
5 to be displayed on the display unit, the item name being
designated by the display-item data read out; and

displaying an item name, which has been read out,
on the display unit as a database search-item name.

[illegible]

ABSTRACT OF THE DISCLOSURE

Stored in a database are a general-purpose table which contains, on a field-by-field basis, element data corresponding to the fields, an item-name definition
5 table which stipulates, field by field, an item name for being made to correspond with a database search-item name, and a page definition table storing display-item data for designating the name of an item to be displayed on a display unit. A search item capable of being
10 displayed on a search page is changed by changing the name of the search item in the item-name definition table. The order in which search items are displayed on the search page is changed by changing the order of arrangement of the page definition table. Thus, items
15 which are displayed on the search page of a database are changed in a comparatively simple manner.

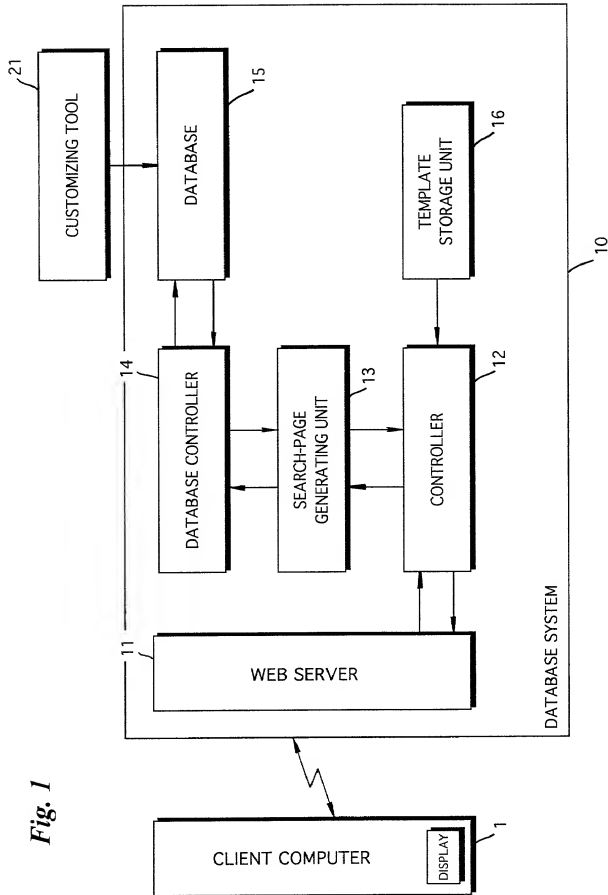


Fig. 1

CLIENT COMPUTER

DISPLAY

DATABASE

SEARCH-PAGE
GENERATING
UNITTEMPLATE
STORAGE
UNIT

CONTROLLER

DATABASE CONTROLLER

WEB SERVER

CUSTOMIZING TOOL

DATABASE SYSTEM

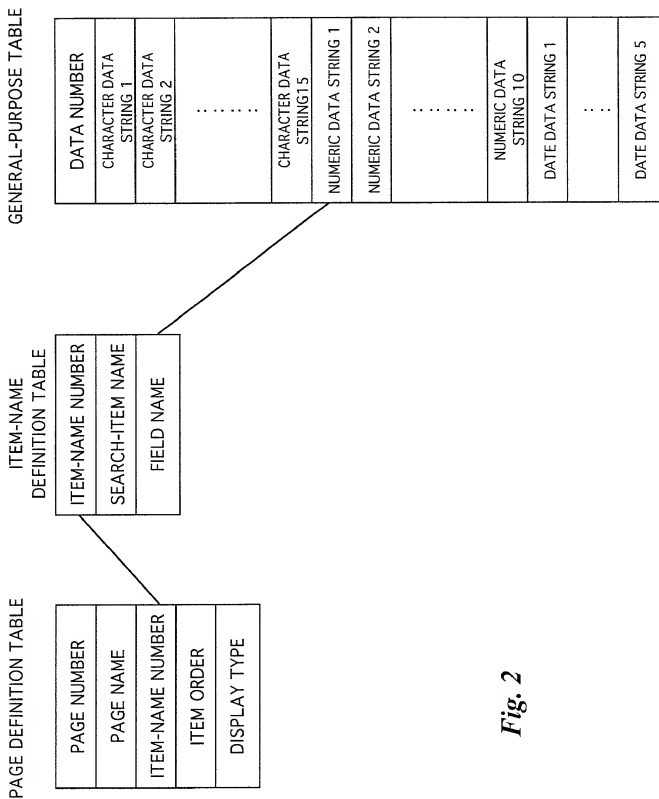


Fig. 2

GENERAL-PURPOSE TABLE

FIELD NAME											
DATA NUMBER	CHARACTER DATA STRING 1	CHARACTER DATA STRING 2	...	CHARACTER DATA STRING 14	CHARACTER DATA STRING 15	NUMERIC DATA STRING 1	...	NUMERIC DATA STRING 10	...	DATE DATA STRING 1	...
1	PRINTER	C-300D		AAA ELECTRIC CO.	TA SYSTEM	18000		15600		1997/4/8	
2	MONITOR	DN40T		BBB MONITOR CO.	FLAT PANEL	43000		7200		1998/1/19	
:	:	:		:	:	:		:		:	
:	:	:		:	:	:		:		:	
:	:	:		:	:	:		:		:	
:	:	:		:	:	:		:		:	
1000		AB-100		EE MEDIA CO.	-	400		50000		1997/12/22	
1001		C-123		FF ELECTRONICS CO.	MEGAPIXEL	780		8100		1999/2/20	
:	:	:		:	:	:		:		:	
:	:	:		:	:	:		:		:	
:	:	:		:	:	:		:		:	
:	:	:		:	:	:		:		:	
:	:	:		:	:	:		:		:	

Fig. 4

ITEM-NAME DEFINITION TABLE (BEFORE CHANGE)

ITEM-NAME NUMBER	ITME NAME	FIELD NAME
1	PRODUCT CATEGORY	CHARACTER DATA STRING 1
2	PRODUCT NAME	CHARACTER DATA STRING 2
⋮	⋮	⋮
9	MANUFACTURER NAME	CHARACTER DATA STRING 14
10	PRODUCT FEATURE	CHARACTER DATA STRING 15
11	WEIGHT	NUMERIC DATA STRING 1
⋮	⋮	⋮
21	NUMBER IN STOCK	NUMERIC DATA STRING 10
⋮	⋮	⋮
24	SALES DATE	DATE DATA STRING 1
⋮	⋮	⋮

PAGE DEFINITION TABLE (BEFORE CHANGE)

Fig. 5

PAGE NUMBER	PAGE NAME	ITEM-NAME NUMBER	ITEM ORDER	DISPLAY TYPE	VALUE
1	ROOT/query	1	1	TEXT	
1	ROOT/query	2	2	TEXT	
1	ROOT/query	9	3	LIST	AAA ELECTRIC CO./FFF ELECTRONICS CO./GG INDUSTRIES
1	ROOT/query	10	4	TEXT	
1	ROOT/query	11	5	TEXT	
1	ROOT/query	24	6	TEXT	
2	ROOT/Entry	1	1	TEXT	
2	ROOT/Entry	2	3	TEXT	
2	ROOT/Entry	9	2	TEXT	
2	ROOT/Entry	10	6	TEXT	
2	ROOT/Entry	11	5	TEXT	
2	ROOT/Entry	24	4	TEXT	
3	ROOT/List	1	1	TEXT	
3	ROOT/List	2	3	TEXT	
3	ROOT/List	9	2	TEXT	
3	ROOT/List	10	4	TEXT	
3	ROOT/List	11	6	TEXT	
3	ROOT/List	24	5	TEXT	

ITEM-NAME DEFINITION TABLE (AFTER CHANGE)

Fig. 6

ITEM-NAME NUMBER	ITEM NUMBER	FIELD
1	PRODUCT CLASS	CHARACTER DATA STRING 1
2	PRODUCT NAME	CHARACTER DATA STRING 2
⋮	⋮	⋮
9	NAME OF MANUFACTURING COMPANY	CHARACTER DATA STRING 14
10	PRODUCT FEATURE	CHARACTER DATA STRING 15
11	POUNDAGE	NUMERIC DATA STRING 1
⋮	⋮	⋮
21	NUMBER IN STOCK	NUMERIC DATA STRING 10
⋮	⋮	⋮
24	SALES DATE	DATE DATA STRING 1
⋮	⋮	⋮

Fig. 7

PAGE NAME : ROOT/query

SET SEARCH CONDITIONS

SEARCH ALL ITEM SEARCH

PRODUCT CATEGORY PRINTER MATCH ▼

PRODUCT NAME MATCH ▼

MANUFACTURE NAME AAA ELECTRIC CO. MATCH ▼

PRODUCT FEATURE INCLUDES ▼

WEIGHT ~ ▼

SALES DATE 1997/1/1 ~ ▼

JOIN CONDITION ● AND ○ OR

SEARCH

A1

A3

A4

Fig. 8

PAGE NAME : ROOT/query

SET SEARCH CONDITIONS

SEARCH ALL ITEM SEARCH

PRODUCT CLASS PRINTER MATCH ▼

PRODUCT NAME MATCH ▼

NAME OF MANUFACTURING COMPANY AAA ELECTRIC CO. MATCH ▼

PRODUCT FEATURE INCLUDES ▼

POUNDAGE ~ ▼

SALES DATE 1997/1/1 ~ ▼

JOIN CONDITION ● AND ○ OR

SEARCH

A1

A3

A4

Fig. 9

PAGE NAME : ROOT/Entry

REGISTER

IMAGE INFORMATION ATTACHMENT DOCUMENT

PRODUCT CATEGORY MONITOR

MANUFACTURE NAME BBB MONITOR CO.

PRODUCT NAME DN40T

SALES DATE 1997/4/5

WEIGHT 43000

FEATURES FLAT PANEL;
FULL COLOR
1600 x 1280

SELECT IMAGE

REGISTER

A5

A7

A6

A8

Fig. 10

PAGE NAME : ROOT/Entry

REGISTER

IMAGE INFORMATION ATTACHMENT DOCUMENT

PRODUCT CLASS MONITOR

NAME OF MANUFACTURING COMPANY BBB MONITOR CO.

PRODUCT NAME DN40T

SALES DATE 1997/4/5

POUNDAGE 43000

FEATURES FLAT PANEL:
FULL COLOR
1600 × 1280

SELECT IMAGE

REGISTER

A5

A7

A6

A8





Fig. 11

PAGE NAME : ROOT/List

A21 LIST OF SEARCH RESULTS A22

GROUP KEYWORD PRODUCT CATEGORY ▼ GROUPING

A10

THUMBNAIL IMAGES	PRODUCT CATEGORY	MANUFACTURE NAME	PRODUCT NAME	FEATURE
	PRINTER	AAA ELECTRIC CO.	C-300D	TA SYSTEM
	CAMERA	AAA ELECTRIC CO.	S-300	MEGAPIXEL
	PRINTER	CC PRINTER CO.	XT-70	INK JET
	PRINTER	DD CO.	NX-500Z	SUBLIMATION

◀◀
◀
1/200
▶
▶▶
BACK

A35 A34 A31 A32 A33 A41





Fig. 12

PAGE NAME : ROOT/List

A21 LIST OF SEARCH RESULTS A22

GROUP KEYWORD PRODUCT CATEGORY ▼ GROUPING

A10

THUMBNAIL IMAGES	PRODUCT CLASS	NAME OF MANUFACTURING COMPANY	PRODUCT NAME	FEATURE
	PRINTER	AAA ELECTRIC CO.	C-300D	TA SYSTEM
	CAMERA	AAA ELECTRIC CO.	S-300	MEGAPIXEL
	PRINTER	CC PRINTER CO.	XT-70	INK JET
	PRINTER	DD CO.	NX-500Z	SUBLIMATION

◀◀
◀
1/200
▶
▶▶
BACK

A35 A34 A31 A32 A33 A41

Fig. 14

PAGE NAME : ROOT/query

The image shows a web-based search interface. At the top, there is a button labeled "SET SEARCH CONDITIONS". Below this, there are two tabs: "SEARCH ALL" and "ITEM SEARCH". The "ITEM SEARCH" tab is selected. The main search area contains several input fields and dropdown menus:

- PRODUCT NAME**: Input field with "MATCH" and a dropdown arrow.
- MANUFACTURE NAME**: Input field containing "AAA ELECTRIC CO." with "MATCH" and a dropdown arrow.
- PRODUCT CATEGORY**: Input field containing "PRINTER" with "MATCH" and a dropdown arrow.
- PRODUCT FEATURE**: Input field with "INCLUDES" and a dropdown arrow.
- WEIGHT**: Input field with a tilde "~" and a dropdown arrow, followed by another input field.

Below the search fields, there is a section for "JOIN CONDITION" with radio buttons for "AND" (selected) and "OR". At the bottom, there is a "SEARCH" button.

Labels A1, A3, and A4 point to specific elements in the interface:

- A1 points to the "ITEM SEARCH" tab.
- A3 points to the "OR" radio button in the "JOIN CONDITION" section.
- A4 points to the "SEARCH" button.

Fig. 15

PAGE NAME : ROOT/Entry

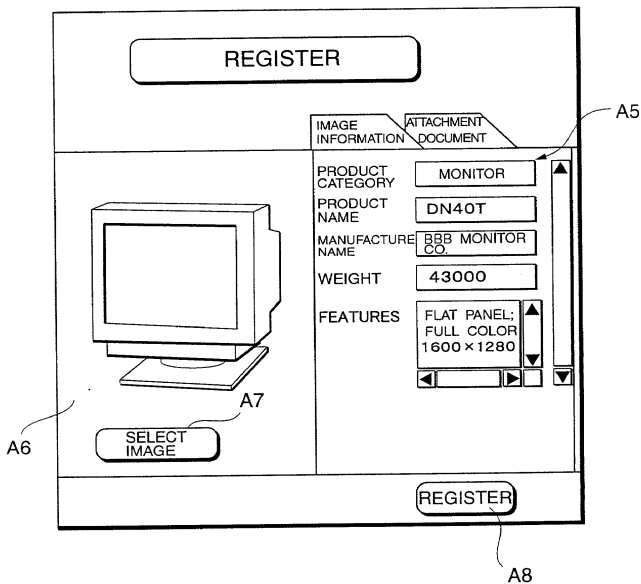






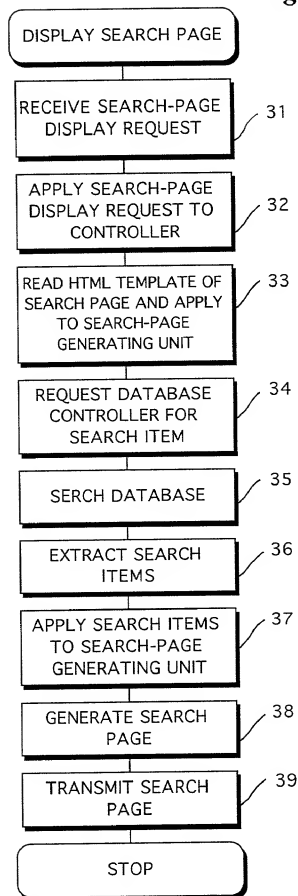
Fig. 16

PAGE NAME : ROOT/List

A21 LIST OF SEARCH RESULTS A22
 GROUP KEYWORD PRODUCT CATEGORY ▼ GROUPING
 A10

THUMBNAIL IMAGES	MANUFACTURE NAME	PRODUCT CATEGORY	FEATURE	PRODUCT NAME
	AAA ELECTRIC CO.	PRINTER	TA SYSTEM	C-300D
	AAA ELECTRIC CO.	CAMERA	MEGAPIXEL	S-300
	CC PRINTER CO.	PRINTER	INK JET	XT-70
	DD CO.	PRINTER	PHOTO-GRAPHIC	NX-500Z

A35 A34 1/200 A31 A32 A33 BACK A41

Fig. 17

DECLARATION AND POWER OF ATTORNEY

As a below named inventor, I hereby declare that:

My residence, post office address and citizenship are as stated below next to my name;

I believe I am the original, first and sole inventor (if only one name is listed below) or an original, first and joint inventor (if plural names are listed below) of the subject matter which is claimed and for which a patent is sought on the invention entitled:

APPARATUS AND METHOD FOR CONTROLLING DISPLAY OF

DATABASE SEARCH ITEMS

the specification of which:
(check one)

☒ (is attached hereto)
☐ was filed on _____
as Application Serial No. _____
and was amended on _____ (if applicable)

I hereby state that I have reviewed and understand the contents of the above identified specification, including the claims, as amended by any amendment referred to above.

I acknowledge the duty to disclose information which is material to the examination of this application in accordance with Title 37, Code of Federal Regulations, § 1.56*

I hereby claim foreign priority benefits under Title 35, United States Code, § 119 of any foreign application(s) for patent or inventor's certificate listed below and have also identified below any foreign application for patent or inventor's certificate having a filing date before that of the application on which priority is claimed:

Prior Foreign Application(s)

			priority claimed	
<u>JP11-79571</u>	<u>Japan</u>	<u>24/03/1999</u>	<u>X</u>	
(Number)	(Country)	(Day/Month/Year Filed)	yes	no
_____	_____	_____	yes	no
(Number)	(Country)	(Day/Month/Year Filed)		
_____	_____	_____	yes	no
(Number)	(Country)	(Day/Month/Year Filed)		

I hereby claim the benefit under Title 35, United States Code, § 120 of any United States application(s) listed below and, insofar as the subject matter of each of the claims of this application is not disclosed in the prior United States application in the manner provided by the first paragraph of Title 35, United States Code, § 112, I acknowledge the duty to disclose material information as defined in Title 37, Code of Federal Regulations, § 1.56 which occurred between the filing date of the prior application and the national or PCT international filing date of this application:

(Application Serial No.)

(Filing Date)

(Status: patented, pending, abandoned)

Power of Attorney: As a named inventor, I hereby appoint Sean M. McGinn, Reg. No. 34, 385, and Frederick W. Gibb, III, Reg. No. 37,629, as attorneys and/or agents to prosecute this application and transact all business in the Patent and Trademark Office connected therewith. All correspondence should be directed to McGinn & Gibb, P.C., 1701 Clarendon Boulevard, Suite 100, Arlington, Virginia 22209. Telephone calls should be directed to McGinn & Gibb, P.C. at (703) 294-6699.

I hereby declare that all statements made herein of my own knowledge are true and that all statements made on information and belief are believed to be true; and further that these statements were made with the knowledge that willful false statements and the like so made are punishable by fine or imprisonment, or both, under Section 1001 of Title 18 of the United States Code and that such willful false statements may jeopardize the validity of the application or any patent issued thereon.

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Citizenship _____
Post Office Address _____

(An additional sheet(s) is/are attached hereto if the present invention includes more than four inventors.)

*Title 37, Code of Federal Regulations, § 1.56:

(a) A patent by its very nature is affected with a public interest. The public interest is best served, and the most effective patent examination occurs when, at the time an application is being examined, the Office is aware of and evaluates the teachings of all information material to patentability. Each individual associated with the filing and prosecution of a patent application has a duty of candor and good faith toward the Patent and Trademark Office, which includes a duty to disclose to the Office all information known to that individual to be material to patentability as defined in this section. The duty to disclose information exists with respect to each pending claim until the claim is canceled or withdrawn from consideration, or the application becomes abandoned.

(b) Under this section, information is material to patentability when it is not cumulative to information already of record or being made of record in the application, and (1) it establishes by itself or in combination with other information, a prima facie case of unpatentability; or (2) it refutes, or is inconsistent with, a position the applicant takes in: (i) opposing an argument of unpatentability relied on by the Office, or (ii) asserting an argument of patentability.